DEC STD 030-0
MODULE MANUFACTURING STANDARD - INTRODUCTION AND GENERAL INFORMATION

DOCUMENT IDENTIFIER: A-DS-EL00030-00-0 Rev S, - -1990

ABSTRACT: This section of DEC STD 030 provides information about the ownership and revision process of the various sections of this standard, the DEC STD 030 Committee Charter, information on waivers and the grandfather clause, and an overview of the design rules presented in other sections of this standard.

APPLICABILITY: This standard is mandatory for designs to be compatible with the standard volume manufacturing process. Site Producibility Engineers are available to provide additional information on specific areas not covered in this standard.

STATUS: FOR REVIEW ONLY

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TITLE: DEC STD 030-0 MODULE MANUFACTURING STANDARD - INTRODUCTION AND GENERAL INFORMATION

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1 INTRODUCTION

EL-SM030-00, *DEC STD 030 Module Manufacturing Standard*, consists of the following sections. Each section contains a separate table of contents and index. EL-00030-IN, *Index to DEC STD 030 - Module Manufacturing Standard*, contains the master index for all sections of the manual.

EL-00030-00	*DEC STD 030-0 Module Manufacturing Standard - Introduction and General Information*
EL-00030-01	*DEC STD 030-1 Module Manufacturing Standard - General Producibility Requirements*
EL-00030-02	*DEC STD 030-2 Module Manufacturing Standard - Product Safety Requirements*
EL-00030-03	*DEC STD 030-3 Module Manufacturing Standard - Component Selection Rules*
EL-00030-04	*DEC STD 030-4 Module Manufacturing Standard - Printed-Wiring Board Design Requirements*
EL-00030-05	*DEC STD 030-5 Module Manufacturing Standard - Module Assembly and Component Insertion Rules*
EL-00030-06	*DEC STD 030-6 Module Manufacturing Standard - Module Testability Rules*
EL-00030-07	*DEC STD 030-7 Module Manufacturing Standard - Backplane Rules and Related Factors*
EL-00030-08	*DEC STD 030-8 Module Manufacturing Standard - Rules for Power Supplies and Nonplug-in Modules*
EL-00030-10	*DEC STD 030-10 Module Manufacturing Standard - Footprint Design for Surface Mount Technology*
EL-00030-IN	*Index to DEC STD 030 - Module Manufacturing Standard*
EL-EN705-00	*Footprint Patterns for Surface Mount Technology*

1.1 PURPOSE

This standard summarizes the module design rules and practices used to optimize the manufacture of modules, power supplies, and backplanes. By designing modules that comply with this standard, the engineer is assured that the product will:

- Fit an automated layout system (CAD)
- Ensure fast PC layout cycle time
- Permit quick prototype turnaround, with automated testing
- Be compatible with Digital's post-processing systems, to provide quick and accurate soft tools to the plants
- Permit the shortest possible volume manufacturing start-up ramp
- Provide "designed-in" quality that will ensure high production yields and reduce high rework costs

1.2 SCOPE

This standard applies to all modules, power supplies, and backplanes. At Digital, the term "module" is used to mean any product or subassembly that has a rigid printed-wire circuit as a base. This document is intended to be an overall summary; where more background information may be relevant, other applicable Digital standards are referenced.

Updates to DEC STD 030 shall be designed to produce a standard that includes up-to-date design rules by the time the products using these technologies are in volume manufacturing.

1.3 REFERENCED MATERIAL

Each section of DEC STD 030 contains a Referenced Documents page that lists the documents referenced in that section. Ordering information is supplied for all referenced documents.

Definitions of terms used in this standard may be found in *DEC STD 016-0 Printed-Wiring Board and Module Manufacturing Terminology*.

1.4 WAIVERS TO THE RULES OF THIS STANDARD

See <REFERENCE>(grandfather_rule_full) and <REFERENCE>(waivers_030_rule_full) for the procedure to obtain DEC STD 030 rule waivers and for an explanation of the grandfather clause as it applies to this standard.

1.5 ECO PROPOSAL AND REVISION CONTROL OF DEC STD 030

Each section of DEC STD 030 shall be under separate revision control and shall have its own table of contents and revision status. Proposed revisions to a particular section of this standard require an ECO proposal form, which must be submitted to the responsible person for that section. The ECO proposal format is shown in Exhibit 1. The format may be copied from this standard or may be reproduced electronically.

1.5.1 Responsible Person

The Responsible Person for each section of DEC STD 030 shall review all ECO proposal forms for that section and submit these proposals with recommendations for acceptance or rejection to the DEC STD 030 Committee. Final approval by the DEC STD 030 Committee is required for ECO implementation. The name of the Responsible Person for each section appears on the Document Management page of that section.

1.5.2 Standards and Methods Control

Standards and Methods Control is responsible for preparing, obtaining approval signatures, and distributing all ECOs to this standard.

Exhibit 1: ECO Proposal Format

PROPOSED ECO TO DEC STD 030

Date of Proposal:	Committee action date:
Submittor:	Action:
DTN: Mailstop:	
ENET:	

A-DS-EL00030-00 Section: Rev: Page: Para:

Current Text:

Proposed Text:

Justification, References:

Impact:

Reviewer's Comments:

Committee Action:

1.6 DEC STD 030 BLUE PAGES

The DEC STD 030 Blue Pages, EL-MF030-BP, *Advanced Rules Specifications (Blue Pages)*, provide Digital hardware designers and manufacturing engineers with a preview of future module manufacturing volume process capabilities, associated design rules, and programs. The Blue Pages provide early planning and predictions for some of the upcoming improvements in Digital's module process. It also provides a feedback exchange and input to the DEC STD 030 Committee. The Blue Pages process is the first formal step in a three-step process to communicate future design rules and input to DEC STDs. These steps are:

1. Advanced Design Data Specification	Blue Pages	Preliminary Design Rules
2. Technical and General Review	Yellow Pages	Detailed Design Rules
3. Final Released Standard	White Pages	Final Rules

2 DEC STD 030 COMMITTEE CHARTER AND OPERATING PROCEDURES

2.1 DEC STD 030 COMMITTEE CHARTER

2.1.1 Purpose

The purpose of the DEC STD 030 Committee is to oversee, update, and improve the content of DEC STD 030 to ensure that the document is accurate and up-to-date, and that it guides the module design community toward design practices that optimize the manufacture of modules, power supplies, and backplanes.

2.1.2 Responsibilities

The DEC STD 030 Committee is responsible for reviewing and approving all proposed ECOs to DEC STD 030.

Committee members are responsible for participating in or sending a representative to committee meetings, and for submitting action items and ECO proposal forms to a co-chairperson in a timely manner.

The DEC STD 030 Committee is also responsible for reviewing all waivers to this standard on a quarterly basis to determine if ECOs to revise the rules of DEC STD 030 may be required.

The DEC STD 030 Committee will recommend additions to the Manufacturing Rules Checker (MRC), a program contained in the VLS design system. These checks will encompass engineering and volume manufacturing rules. Any individual may submit requests to the committee for the inclusion of new rules.

2.1.3 Committee Membership

The Committee requires commitment and active participation from representatives of all major groups affected by DEC STD 030 and by selected technical resources whose skills can enhance the effectiveness of the Committee. The DEC STD 030 Committee consists of the representatives listed in Exhibit 2.

Exhibit 2: DEC STD 030 Advisory Committee Members

Co–Chairpersons	Kathy Bailey Charlie Newall	SALEM::BAILEY_K RUTLND::NEWALL
CAD	Dave Drozd Dave Atkinson	RATPAK::DROZD CSS::ATKINSON
Advanced CAD	Dave Ellis	CADSE::ELLIS
Data Integration	Bob Waldie	PARITY::WALDIE
PWB	Gerald Gagnon	GAGMAN::GAGNON
Assembly	Mike Brennan	PARITY::BRENNAN
Module Test	Fred Bates	TSE::BATES
Advanced Test	Bob Hartnett	HAZEL::HARTNETT
Backpanels	Jim Keenan	POLAR::KEENAN
Power Supply	Mike Brennan Gene Wright	PARITY::BRENNAN BTOVT::WRIGHT_G
Components	Alexander Sos	PROXY::SOS
Product Safety	Gerald Gagnon	BOARDS::GAGNON
Producibility	Joanne Cattley Charlie Newall Bob Morawiak Chris Sweeny	KNGBUD::CATTLEY RUTLND:NEWALL FRSBEE::MOROWIAK MPGS::SWEENY
GSO Producibility	John Mikulas	RAVEN1::MIKULAS
Standards and Methods	Jan Litchfield	JOKUR::LITCHFIELD
Field Service Logistics	Henry Moy	FSLENG::HMOY
Design Engineering	Dick Manion	MEMORY::MANION
SMT Footprints	Royce Taylor Anolanday Sanyal	NAVIER::TAYLOR NAVIER::SANYAL
Substrates	Scott Westbrook	WLDWST::WESTBROOK

2.2 OPERATING PROCEDURES

The DEC STD 030 Committee will hold quarterly meetings to ensure that the content of the standard is accurate and up-to-date. Attendance by committee members is required. Committee members who cannot attend a meeting should send a representative in his/her place.

2.2.1 Co-Chairperson Responsibilities

The committee co-chairpersons are responsible for:

- Scheduling Committee meetings
- Notifying Committee members of scheduled meetings
- Creating Committee agendas
- Distributing minutes to Committee members
- Providing action items to Committee members after a meeting
- Recommending time frames for submitting results of action items

2.2.2 Voting

If a conflict arises during a meeting, a majority vote by groups represented on the Committee is required for resolution. The following groups each have one vote:

- CAD
- Advanced CAD
- CAD/CAM Integration
- PWB
- Assembly
- Module Test
- Advanced Test
- Backplanes
- Power Supplies
- Components
- Product Safety
- Producibility
- Standards and Methods Control
- Field Service Logistics
- Design Engineering
- Substrates

2.2.3 Agenda Items

Committee members should submit agenda items to a co-chairperson at least one week before a scheduled meeting. Any person outside the Committee may propose agenda items to a Committee member.

3 RESPONSIBILITIES

3.1 DESIGN ENGINEERING

Module and backplane designers are responsible for complying with the design rules and practices stated in this standard. See Exhibit 3 for a summary of these rules. Special application designs must meet specific requirements that may be covered in other standards or specifications, such as *DEC STD 052-4 Local Direct Connection (No Modem) for Serial Asynchronous Terminals and System Interfaces*. Contact the PTT Program Office when designing boards that will connect directly to telephone lines.

3.2 PRE-DESIGN PRODUCIBILITY

Pre-Design Producibility is responsible for exploring, wherever possible and after the standard approach has been fully evaluated, acceptable alternatives to DEC STD 030 requirements that will satisfy the needs of the Design Engineer.

References to Producibility engineers throughout this standard refer to Manufacturing group-level producibility engineers located at design sites.

4 SUMMARY OF DESIGN RULES

Exhibit 3: Directory of Design Rules Covered By This Standard

Topic (Rule Series)	Content	Key Resources Person	Mfg. or Eng. Organization
Producibility (1000 Series)	Overview of Producibility System PDQ Code, General Rules Summary	Kathy Bailey/ Charles Newall	Producibility
Product Safety (2000 Series)	Summary of Requirements PWB Requirements	Henry Singer Gerry Gagnon	
Components (3000 Series)	Design Selection Rules, Selection Assistance	Group Component Engineering Managers *	Component Engineering
Printed Circuits (4000 Series)	Features, Design Rules, Standard Grid Rules, Artwork Development	Gerry Gagnon	PW Boards Group
Module Assembly (5000 Series)	Major Assembly Features and Acceptance Criteria	Mike Brennan	CSME Assembly Systems Engineering
Test (6000 Series)	Testability Review Process	Fred Bates	CSME – Technical Services
Backplanes (7000 Series)	Design Rules, Assembly Rules, Wirewrap Rules	Jim Keenan	KAO Producibility
Power Supplies (8000 Series)	Design and Assembly Rules	Mike Brennan/ Gene Wright	CSME Assembly Systems Engineering
Footprint Design (10,000 Series)	Design Rules	Royce Taylor	Interconnect Technology and Process Development
Substrate Design (11,000 Series)	Technology Description Design Rules	Scott Westbrook	UCF

* See <REFERENCE>(compsel_asst_head_full).

REFERENCED DOCUMENTS

EL-Class Digital Documents

EL-Class Number	Document Title
EL-00016-00	*DEC STD 016-0 Printed-Wiring Board and Module Manufacturing Terminology*
EL-00030-01	*DEC STD 030-1 Module Manufacturing Standard - General Producibility Requirements*
EL-00030-03	*DEC STD 030-3 Module Manufacturing Standard - Component Selection Rules*
EL-00052-04	*DEC STD 052-4 Local Direct Connection (No Modem) for Serial Asynchronous Terminals and System Interfaces*
EL-MF030-BP	*Advanced Rules Specifications (Blue Pages)*
EL-SM030-00	*DEC STD 030 Module Manufacturing Standard*

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